

We claim:

Sup 1/2 1. In a data communication network comprising a plurality of optical label switching routers and fiber optic links between said optical label switching routers, a method of representing optical network bandwidth, said method comprising:

4 assigning an optical label to a channel group, said channel group using one of said
5 fiber optic links and comprising a plurality of channels;

6 encoding said optical label so as to comprise a type field, a length field and a value
7 field, where said value field comprises a label component and where said label
8 component comprises an indication of bandwidth on each of said plurality of
9 channels.

1 2. The method of claim 1 wherein said indication of bandwidth identifies said one of said
2 fiber optic links and a wavelength on said one of said fiber optic links.

1 3. The method of claim 2 wherein said indication of bandwidth further identifies said
2 channel group.

1 4. The method of claim 3 wherein said bandwidth on each of said plurality of channels is
2 represented by a single bit.

1 5. The method of claim 4 wherein a bit value of zero indicates available bandwidth on a
2 given one of said plurality of channels.

1 6. In a data communication network comprising a plurality of optical label switching routers
2 and fiber optic links between said optical label switching routers, a method of representing
3 traffic characteristics of an interface between a node in a service network and one of said
4 optical label switching routers, said method comprising:

5 encoding a representation of said traffic characteristics of said interface so as to
6 comprise a type field, a length field and a value field, where said value field
7 comprises an attribute.

1 7. The method of claim 6 wherein said attribute comprises an indication of a service type of
2 said service network.

1 8. The method of claim 6 wherein said attribute comprises an indication of a control
2 protocol of said service network.

1 9. In a data communication network comprising a plurality of optical label switching routers
2 and fiber optic links between said optical label switching routers, a method of representing
3 characteristics of an optical trail, said method comprising:

4 encoding a representation of said characteristics of said optical trail so as to comprise
5 a type field, a length field and a value field, where said value field comprises a
6 channel group description; and

7 where said channel group description comprises an indication of channel group type
8 and an indication of a number of members in said channel group.

1 10. In a data communication network comprising a plurality of optical label switching routers
2 and fiber optic links between said optical label switching routers, a method of specifying
3 session parameters for an optical communication session over one of said fiber optic links,
4 where said one of said fiber optic links originates at an originating label switching router, said
5 method comprising:

6 encoding a specification of said session parameters so as to comprise a type field, a
7 length field and a value field, where said value field comprises a range component;
8 and

9 said range component comprises:

10 an identity of one of said fiber optic links;

11 a lower bound of a block of wavelengths supported by said originating label
12 switching router on said one of said fiber optic links; and

13 an upper bound of said block of wavelengths supported by said originating
14 label switching router on said one of said fiber optic links.

1 11. A data structure for use in communicating information regarding a plurality of channels
2 from a first label switching router to a second label switching router comprising:

3 a type field;
4 a length field; and
5 a value field;
6 where said value field comprises a label component, and said label component
7 comprises an indication of bandwidth on each of said plurality of channels.

1 12. A data structure for use in communicating information regarding an interface between a
2 node in a service network and a label switching router in a label switching network,
3 comprising:

4 a type field;
5 a length field; and
6 a value field;
7 where said value field comprises an attribute and where said attribute comprises an
8 indication of a service type of said service network.

1 13. A data structure for use in communicating information regarding an interface between a
2 node in a service network and a label switching router in a label switching network,
3 comprising:

4 a type field;
5 a length field; and
6 a value field;
7 where said value field comprises an attribute and where said attribute comprises an
8 indication of a control protocol of said service network.

1 14. A data structure for use in communicating information regarding an optical label
2 switching path from a first label switching router to a second label switching router
3 comprising:

a type field;

a length field; and

a value field;

where said value field comprises a channel group description and where said channel group description comprises an indication of channel group type and an indication of a number of members in said channel group.

15. A data structure for use in communicating information regarding session parameters for an optical communication session over a fiber optic link from an originating label switching router to a receiving label switching router comprising:

a type field;

a length field; and

a value field;

where said value field comprises a range component and said range component comprises:

an identity of said fiber optic link;

a lower bound of a block of wavelengths supported by said originating label switching router on said fiber optic link; and

an upper bound of said block of wavelengths supported by said originating label switching router on said fiber optic link.

16. An optical label switching router operable to:

assign an optical label to a channel group, said channel group using one of a plurality of fiber optic links and comprising a plurality of channels;

encode said optical label so as to comprise a type field, a length field and a value field, where said value field comprises a label component and where said label

6 component comprises an indication of bandwidth on each of said plurality of
7 channels.

1 17. An optical label switching router operable to:

2 encode a representation of characteristics of traffic over an interface between a node
3 in a service network and said optical label switching router so as to comprise a type
4 field, a length field and a value field, where said value field comprises an attribute of
5 said traffic.

1 18. An optical label switching router operable to:

2 encode a representation of characteristics of an optical trail of a channel group so as to
3 comprise a type field, a length field and a value field, where said value field
4 comprises a description of said channel group; and

5 where said description of said channel group comprises an indication of a type of said
6 channel group and an indication of a number of members in said channel group.

1 19. An optical label switching router operable to:

2 encode a specification of session parameters for an optical communication session
3 over a fiber optic link so as to comprise a type field, a length field and a value field,
4 where said value field comprises a range component;

5 where said range component comprises:

6 an identity said fiber optic link;

7 a lower bound of a block of wavelengths supported by said label switching
8 router on said fiber optic link; and

9 an upper bound of said block of wavelengths supported by said label switching
10 router on said fiber optic link.

1 20. A computer readable medium for providing program control for an optical label switching
2 router, said computer readable medium adapting said optical label switching router to be
3 operable to:

4 assign an optical label to a channel group, said channel group using one of a plurality
5 of fiber optic links and comprising a plurality of channels;

6 encode said optical label so as to comprise a type field, a length field and a value
7 field, where said value field comprises a label component and where said label
8 component comprises an indication of bandwidth on each of said plurality of
9 channels.

1 21. A computer readable medium for providing program control for an optical label switching
2 router, said computer readable medium adapting said optical label switching router to be
3 operable to:

4 encode a representation of characteristics of traffic over an interface between a node
5 in a service network and said optical label switching router so as to comprise a type
6 field, a length field and a value field, where said value field comprises an attribute of
7 said traffic.

1 22. A computer readable medium for providing program control for an optical label switching
2 router, said computer readable medium adapting said optical label switching router to be
3 operable to:

4 encode a representation of characteristics of an optical trail of a channel group so as to
5 comprise a type field, a length field and a value field, where said value field
6 comprises a description of said channel group; and

7 where said description of said channel group comprises an indication of a type of said
8 channel group and an indication of a number of members in said channel group.

1 23. A computer readable medium for providing program control for an optical label switching
2 router, said computer readable medium adapting said optical label switching router to be
3 operable to:

4 encode a specification of session parameters for an optical communication session
5 over a fiber optic link so as to comprise a type field, a length field and a value field,
6 where said value field comprises a range component; and

11 an upper bound of said block of wavelengths supported by said label switching
12 router on said fiber optic link.

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